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A. C. TRUE, Director.

REPORT OF THE COMMITTEE ON INSTRUCTION IN AGRICULTURE, 1911.¹

During the past year this committee has made studies along two lines, (1) the relation of rural economics to farm management, and (2) the grouping of studies in college courses in agriculture. Reports on both of these subjects are submitted herewith. Brief mention is also made of the work of the committee relating to home economics.

RURAL ECONOMICS AND FARM MANAGEMENT.

In its first report in 1896 this committee said: "One great obstacle to the intelligent discussion of the scheme of agricultural instruction and the methods of agricultural teaching is the lack of definite nomenclature of the subject." The committee, therefore, suggested a tentative scheme for the division of what was then commonly designated agriculture in courses of study into several branches or subdivisions, and for giving each of these branches a definite name, as follows:

1. Agronomy, or agriculture (technical). (Climate, soils, fertilizers, and crops—plant production.)
2. Zootechny, or animal industry. (Animal physiology and animal production.)
3. Agrotechny, or agricultural technology. (Agricultural industries, e. g., dairying, sugar making.)
4. Rural engineering, farm mechanics, or farm equipment. (Roads, drains, irrigation system, farm buildings, etc.)
5. Rural economy, or farm management. (General policy of farm management, rural law, agricultural bookkeeping, etc.)

The committee went on to say: "If we can reach a point where the term *agriculture*, as applied to what is taught on agricultural subjects in a college course, shall generally be understood to include at its widest the five subordinate subjects indicated in the above scheme, and in its restricted sense only what applies to plant production, an important step will have been taken in settling the proper boundaries of agricultural instruction and in fixing the proper sub-

¹This report was presented to the Association of American Agricultural Colleges and Experiment Stations at the convention held in Columbus, Ohio, November 15-17, 1911.

divisions of the general subjects. It is probable that the substitution of a more definite and technical term for agriculture in its restricted sense would simplify matters. The term 'agronomy' is tentatively suggested as such a term, and the opinion of the members of the association on this, as well as other terms suggested, is invited." Agronomy has come into general use.

In the 15 years that have passed since this committee made its first report and suggested the quintuple division of the subject of agriculture, at least four of these branches have come to be recognized as distinct subjects of study. Other lines of cleavage have developed. At least one institution has so subdivided its work in agronomy that it no longer has use for the term. In the future other subdivisions will occur.

It has not been the aim of this committee to outline a philosophically correct classification of agricultural knowledge, but rather to meet the agricultural needs of institutions in order that they may get the best results with the human and financial resources at their command. Of course, the more nearly a scientifically defensible classification can be made to meet the needs of institutions the better, but it must ever be kept in mind that the primary purpose of any classification is the very practical and everyday one of securing the most efficient instruction possible under existing conditions.

On the other hand, the committee has not concerned itself with the method of organization within the institutions. It did not consider it within its province, for example, to decide whether agronomy and animal husbandry were to be taught by the same man, or by different men in the same department, or in different departments, but merely to insist that they were distinct subjects of study. The organization within an institution, the committee believed, as Hancock did about the tariff, was a local issue, and for very much the same reasons.

This imperfect reference to past conditions and the development of agricultural instruction in this country has been made in order to prepare our minds for considering the fifth subdivision of agriculture, as proposed by our committee. It will be noted that the committee designated subdivision No. 5 as rural economy *or* farm management, and not as rural economy *and* farm management, which is perhaps merely an indication that the committee did not see very far into the future and may have, indeed, been a contributing cause of the conditions which have arisen.

At any rate, in the past 15 years greater attention than hitherto has been given to the presentation of economic theories and occasionally economic facts as contrasted with physical and biological facts and theories. These economic problems have been dealt with

by men of different training and experience and often widely different environments. The organization of the college, more or less accidental, has been an important environmental factor. It is perhaps not surprising that different emphasis has been placed upon different classes of facts by the different instructors, and it is no less surprising that a lack of uniformity in nomenclature should have occurred. Since, however, a fundamental requisite for men who are to deal with economic problems is supposed to be a training in logical reasoning, it should not be difficult to come to a common understanding, if not agreement, on terminology, lines of cleavage, and content of courses in this line of work.

Prof. H. C. Taylor, of the Wisconsin College of Agriculture, writing to the dean of his college, says:

I wish to call your attention to the desirability of having a committee appointed at the next meeting of the American Association of Agricultural Colleges and Experiment Stations to present a report on terminology, lines of cleavage, and content of courses which should be made use of in that line of work which relates to the economic aspects of the production and marketing of agricultural products.

During the last few years courses have multiplied in this field. The terminology varies so greatly that a man in one of the agricultural colleges talking to a man in another agricultural college has to explain what he means by his phrases before the two can understand each other. The phrases rural economy, rural economics, agricultural economics, farm management, farm administration, farm organization, and economics of farm management are all often used to designate the same kind of work. It is also true that the usage in many of the agricultural colleges of the United States is clearly out of harmony with the usage in those European countries where this field has been well developed. I think it highly desirable, therefore, that a committee be appointed with a view to clearing up some of the fog that still hovers about this new field.

The outcome of the above appeal is stated in a letter written by Dean Hunt to a number of men known to be interested in one or more of the phases of economics as related to agriculture, as follows:

At a meeting of the committee on instruction in agriculture of the Association of American Agricultural Colleges and Experiment Stations, of which Dr. A. C. True is chairman, held at Washington, D. C., November 16, 1910, a subcommittee on rural economics and farm management was appointed, consisting of H. C. White, J. F. Duggar, and T. F. Hunt, to study the relationship between rural economics and farm management and, if possible, to define the subjects and determine their lines of cleavage.

On July 29, 1910, there was formed at the Graduate School of Agriculture, held at the Iowa State College, Ames, Iowa, the American Farm Management Association, which adopted in a tentative way an analysis of the rural problem as outlined by President Butterfield, viz: (1) The technical aspect—farm practice or agriculture; (2) the business aspect—farm administration or farm management; (3) the scientific aspect—agricultural science; (4) the industrial aspect—agricultural economy; (5) the community aspect—rural sociology.

The committee assumes that it is charged with the responsibility of dealing with Nos. 2, 4, and 5. It is obvious that in order to make a study of rural economy and farm management, as they affect the practical workings of the institutions of the Association of American Agricultural Colleges and Experiment Stations, it is essential that the committee should acquire as fully as may be a knowledge of the subject matter actually taught in the leading institutions, and especially in those institutions which have both a department of rural economy and a department of farm management.

I have made a *free* translation of the table of contents of a recent French work on rural economy. It is thought that this syllabus might serve as a point of departure in the discussions of the subject of rural economics and farm management, and that it would indicate the amount of detail desired to those who may feel disposed to assist the committee.

There was a rather generous response to this letter, all the replies expressing a deep interest in the question under consideration. It is believed that excerpts from these letters will present, as no other analysis could, some of the points that must be considered before a satisfactory and final solution can be reached.

President K. L. Butterfield, of the Massachusetts Agricultural College, writes as follows:

In the first place, I do not like the phrase "rural economy." It is a good old phrase and was very expressive during the naive stage of agricultural education. At this college we have organized a division of "rural social science," with departments of agricultural economics, agricultural education, and rural sociology. Some time we may organize a department of rural government and law.

The phrase "rural social science" is perhaps a bit pedantic, but it is thoroughly expressive. The phrase, social science, as used in our colleges and universities, is pretty clearly defined. Now the application of this social science—economics, sociology, government, and political science—to rural conditions specifically, it seems to me, constitutes a clear field which is amply expressed by the phrase "rural social science."

Moreover, I have had this very matter up before such sociologists as Dr. Giddings, of Columbia University; Dr. Ross, of Wisconsin; and Dr. Cooley, of Michigan, and others, and they have acquiesced in the nomenclature.

This analysis, of course, excludes farm administration. Here we have organized a department of farm administration in the division of agriculture. The student of farm administration will need to use the materials of agricultural economics, but he has, or ought to have, distinctly the farm point of view, and I think farm administration clearly belongs with agriculture rather than with rural social science.

We might say that farm administration deals with the individual farmer as a wealth producer; agricultural economics with farmers as a class of wealth producers and their relationship to other wealth producers; rural sociology deals with the human welfare of farmers and rural communities.

At Ames I used the following definitions:

The business aspect: Farm administration or farm management.

How can the individual farmer so organize the factors of production—land, labor, and capital—on his farm, so adapt farm practice to his particular environments, and so dispose of his produce as to yield him the largest net return, while still maintaining the integrity of his land and equipment?

The industrial aspect: Agricultural economics.

How can the farmers as a class secure the largest financial success, while giving to the consumers an adequate food supply and maintaining the soil resources? How adjust systems of land tenure, means of transportation, methods of marketing, systems of taxation, institutions of credit, and protective and stimulating legislation to the legitimate needs of the farming class?

The community aspect: Rural sociology.

How can the people who farm best utilize their industrial and social environments in the development of personal character, best cooperate for their common welfare, minister to the continued improvement of the common or community life? How best organize the personal and community resources of the rural people for the purpose of contributing most fully to national welfare?

Director L. H. Bailey, of the College of Agriculture of Cornell University, says:

I am glad that the subject of rural economics, as distinguished from farm management, is to be attacked by the Association of American Agricultural Colleges and Experiment Stations. I am sure that there is great confusion in the minds of the people in the institutions as to the distinction between these two kinds of things. For myself, I think that the distinctions are very plain and that there is no occasion for confusing them. My notion in regard to the two fields is stated on page 142 of Volume I of the *Cyclopedia of American Agriculture* and again on pages 438-442 of Volume IV, where the subject is divided by Warren and Lauman. In the translation that you sent I should think that the author includes both these fields under one general term. Farm management has to do with the business organization and direction of the farm; rural economics, as I conceive the term, has to do with the relation of the farm to the community. In a general way, the first three volumes of the *cyclopedia* to which I have referred comprise the subject of farm management; Volume IV is concerned with some phases of rural economy. Warren's Bulletin No. 295, on the survey of Tompkins County, attacks particularly the farm-management phases of the subject. We are hoping now to follow up with social, economic, religious, and sanitary studies.

Dean H. C. Price, of Ohio State University, says:

In my own classification I have used rural economics as a generic term including farm management, agricultural economics, rural sociology, and comparative and historical agriculture. Between agricultural economics and farm management I have made the distinction that farm management is a study of the economics of agriculture from the standpoint of the individual, and that agricultural economics is a study of the industry in its relation to other industries from the standpoint of society as a whole. I feel that the study of historical and comparative agriculture is entitled to a place in rural economics, as it has direct bearing upon both the subject of farm management and agricultural economics.

While it will be necessary to separate farm management from agricultural economics as the work is developed, it seems to me that they are both closely related and that rural economy can well be used as a generic term to include both of them.

Prof. D. H. Doane, of the University of Missouri, and also in charge of farm management in Missouri for the United States Department of Agriculture, says:

Farm management is the organizing and correlating of the elements and branches of agriculture into a successful system or plan of farm adminis-

tration. Rural economics, as I see it, is simply one of the "elements or branches."

I class the rural economist with the agronomist, the animal husbandman, the horticulturist, and others. They simply bring or contribute the material, while the farm-management man must tell "what" and "how much" to select and use.

There is more difficulty in distinguishing between general economy and rural economy than between the latter and farm management. I think the rural economist and the farm-management man should work hand in hand. In fact, we have in our department here a phase of farm accounting and work along "cost-of-producing" lines that is in reality farm or rural economy. We find this work necessary as a "following-up" plan, or a system for proving suggested operations.

There is also a great field of advance investigation, as G. F. Warren is doing in New York. The rural economist is of particular value to the farm-management man because his most valuable field from the farm-management man's standpoint has been, previous to Mr. Warren's recent bulletin, untouched.

Prof. C. W. Pugsley, of the University of Nebraska, says:

I started with the conviction that there was no need of a separate farm management department in any institution. I at first believed that the farm management work should be carried on by the various departments of the experiment station. I started a little of this while in the animal husbandry department, but the problems presented were so complicated that I soon found myself talking things, or desiring to talk things, that were not animal husbandry.

I find that in the minds of those who have decided on lines of cleavage there are two different opinions. The first one is that all the technical work should be carried on in the various departments of the station or college. For example, all problems relating to how to feed live stock, how to grow crops, how to select and care for seed, how to handle the dairy herd, should be left with the animal husbandry, agronomy, and dairy husbandry departments. The problem of laying out the farm, deciding upon the amount of crops to grow, determining the amount of labor and the methods of handling same, the discussion of marketing all the farm produce, the money to be made from various types of farming, the arrangement of buildings and fields on the farm, the proper rotations for various types of farming—in fact, everything connected with the business management of the farm—should be treated in the farm management department. In other words, the farm management teacher deals with the individual farmer. The rural economist deals with types of farming, methods of marketing, problems of cooperation, etc., in relation to the farmer as a class. He only considers the individual farmer in so far as it affects the farming community. The rural sociologist takes up the problem from the standpoint of the society of the farmer and the effect upon the general social organization.

Prof. D. H. Otis, of the University of Wisconsin, says:

I have your favor of recent date, inclosing a translation of the table of contents of E. Jouzier's work on rural economy. I have looked over this outline somewhat carefully and as near as I can judge (not knowing just how all the subjects are treated) it deals with questions that belong to both rural economy and farm management as outlined by President Butterfield, and in a few instances (if I interpret the outline correctly) takes up questions that might properly belong to animal husbandry, agricultural chemistry, and agronomy.

My experience as a teacher and as a practical farm manager both leads me to strongly believe that the analysis as given by President Butterfield is the correct one. It seems to me that the rural economist must necessarily approach his subject from the standpoint of the economist. He must be an economist first, and a farmer second.

On the other hand, I am strongly convinced that the man interested in farm management, while he should and must be familiar with economic principles, must of necessity approach his subject from the standpoint of farm experience. He must be a farmer first, and an economist second. Farm management, as I see it, is the application of economic and scientific principles to the business management of the individual farm.

Prof. G. F. Warren, of Cornell University, gives several definitions in his letter, which follows:

The report of the American Farm Management Association gives what seems to me a clear discussion of the relationship between farm management, agronomy, and animal husbandry on the one hand, and farm management and rural economy on the other.

How shall I grow corn is agronomy. How shall I grow an animal is animal husbandry. But shall I grow animals or corn, or both, or neither, is farm management.

Rural economy deals with the public relations of farming rather than with the internal organizations and management of specific farms.

The outline of Jouzier's Rural Economy, which you so kindly inclosed, has a strange mixture of work in soils, agronomy, rural economy, farm management, and other subjects. I can not prevent myself from coming to the conclusion that Prof. Jouzier has included all of the particular things that he happened to know about agriculture, no matter what field they were in. It impresses me very much like the papers written by persons in this country, who, while they may be excellent students in certain fields, know very little about agriculture and its different phases, and when they write include all of the particular things they happen to know.

I think it will be well worth while for the committee to define what seems to be the logical definition of material in agronomy, animal husbandry, rural economy, farm management, etc., when these are to be put into separate departments. Of course, what should actually be taught under these various subjects is largely a matter of organization within each college. But I believe it well worth while to give some standard definition of the subjects, so that if a man covers two, three, or four of the various subjects he may better recognize the fact.

In actual practice I believe you will find that there is more of a tendency for farm management to overlap on agronomy and animal husbandry than there is for it to overlap on rural economy. I think, therefore, that if you are to define the subject of farm management you will have to suggest what its limitations are in this direction as well as in the direction of question of public welfare.

The following extract from a letter by Mr. L. H. Goddard, of the Ohio Experiment Station, is introduced here to illustrate the fact that not only have teachers experienced some difficulty concerning lines of cleavage but the investigators have had similar difficulties. We quote:

Thus far the only line that we have had occasion to draw is that between farm practice and farm management, as you will see by the inclosed copy of letter [Cir. 115]

dated March 13. Owing to the fact that no other department of the institution has shown any particular interest in farm management, rural economics, or sociology, we have felt at liberty to touch on any element of any one of these that conditions seem to indicate are germane to our work.

Prof. F. D. Gardner, of Pennsylvania State College, discusses farm management as related to rural economics as follows:

In our land-grant agricultural colleges the subject of rural economics has included the subject of farm management and in most of these institutions continues to embrace both fields of study. Within the last two or three years a few of these institutions have separated the subjects and are now teaching them separately. Notable among these institutions are Cornell University and the University of Wisconsin. While farm management and rural economy are intimately related, it seems to me that for both instructional and investigational purposes it is desirable to define the subjects as clearly as possible and treat them separately.

To my mind, farm management deals with the farm as a unit, while rural economy deals with the aspects of the farm and the farmer which have a community interest and which affect a community as a whole.

Farm management should be based on the subjects of agronomy, horticulture, animal husbandry, dairy husbandry, agricultural engineering, and the sciences and practices that underlie these subjects. As taught to the student, it should follow and be based on his knowledge of these subjects. It is the culmination of his technical studies in agriculture, bringing them together and applying them to the problems of the farm and its administration. It may be followed by or accompany the subject of rural economy.

The crop adaptation of the soil, the character of fertilizer required by the soil and for the crop, are questions that belong to the field of agronomy. The rotation of the crops, determined by the requirements of the live stock on the farm or the proportion of various crops as determined by distance to market, market demands, and as related to the most economical use of the farm equipment, labor, and managerial activity, are problems of farm management.

Land drainage and its installation is a problem in agricultural engineering, but the question as to whether the installation of the drainage system will prove profitable is a problem in farm management.

Farm management deals with the administration of the farm as a unit so as to produce the maximum profit from land, labor, capital, goods, and managerial activity at hand. It deals with the layout of the farm, with the extent and general character of improvements and buildings, but leaves the survey of the farm and the construction of the buildings to agricultural engineering. It considers the rotation of crops in relation to the maintenance of soil fertility, the acreage of crops in relation to the economical use of labor and equipment. It considers the number of the various classes of animals that can best be maintained and whether concentrates shall be grown on the farm or whether they may be most economically purchased from outside sources.

How to operate and care for farm machinery belongs to the field of agricultural engineering, but the duties of machinery, how many machines of various kinds will be required, or whether the farmer should own a self-binder or should rent one, are problems belonging to farm management. Land rentals, relation of landlord to tenant, forms of leases, the employment of labor, its management, responsibility, and liabilities, are problems of farm management.

Farm management also deals with markets and marketing, with transportation facilities, and with cooperation. These, however, may go so far as to be-

come community enterprises and be equally as much the problems of rural economics. Legal forms, farm records, and farm accounts also belong to the field of farm management.

The line of cleavage separating farm management from rural economics may not be sharply defined. The line inclosing and separating one from the other will be a series of projections and recessions dovetailing together as the cogs of one pinion dovetail with those of its companion.

Prof. H. C. Taylor, of Wisconsin, says:

Of the recent writers you could have done no better than to refer to Jouzier. The table of contents seems to include the main points needed for present purposes. This in itself would be sufficient to show that the question under consideration is one of words, for Jouzier includes under *économie rurale*, which for my purpose I translate agricultural economics, the very subject matter which some in this country call farm management.

I wish, however, to quote from Jouzier's introduction some paragraphs which seem to throw light upon the subject in hand:

"Philologists tell us that the word economics is formed from two Greek words, which, united, means laws or rules of the household—that is to say, developing the idea which the ancients attached to the words: The manner of regulating the relations of the different elements composing the resources of the household, whether it be their relations to each other or to the members of the household, in order to insure the greatest prosperity to the family.

"The addition of the qualifying adjective 'agriculture' does not change the meaning of the word 'economics' at all; it simply limits the domain to which it is to be applied. In place of saying 'the household' we must say 'the agricultural household.' But as the agricultural household is the farm, or, in more exact language, 'the agricultural enterprise,' we shall say that *agricultural economics is that branch of agricultural science which treats of the manner of regulating the relations of the different elements composing the resources of the farmer, whether it be their relation to each other or to human beings, in order to secure the greatest degree of prosperity to the enterprise.*

"These relations consist in (1) *relations of contact* (supplementary, complementary, or competitive) between the different branches of the enterprise, such as, for example, the simultaneous raising of cereals and animals on the same farm; (2) *relations of activity* between the different means employed in the process of production, as in the simultaneous employment of machinery and human labor; (3) *in relations of value* between the means employed in production and the production itself; (4) *in commercial relation* with the social environment, etc.

"The domain of agricultural economics, then, covers the examination of each element of agricultural production, whether in connection with any one of the above-named relationships in particular or with several of them together, for the purpose of obtaining the greatest net profit.

"We may consider agricultural economics as a science or as an art, from a theoretical point of view or from a practical point of view. If we consider it as a science or theory it is the knowledge of the laws which govern the above-named relations; if as an art or practical matter, it is the application of this knowledge in a limited, particular environment for the realization of results from these relationships."

It will be clear from this statement that Jouzier looks upon agricultural economics as (1) the science which treats of the principles which underlie the

coordination of all parts of the farm (land, labor, equipments, and the various lines of production) in such a manner as will enable the farmer to secure maximum net profits, and (2) the art of applying these principles on a given farm.

In the University of Wisconsin the science and art of managing individual field crops are taken up by the agronomy department; the science and art of managing orchard and garden crops by the horticultural department; the science and art of managing machinery by the agricultural engineering department; the science and art of the selection and feeding of live stock by the animal husbandry department; the science and art of dairy management by the dairy department; the science and art of soil management by the department of soils. These primary lines of activity when united constitute farming. *The science and art of coordinating these lines of activity, and the land, labor, and equipment employed in such a manner as to enable the farmer to secure maximum results from the combined activities, is handled by the department of agricultural economics.* The science and art can not be divorced. When separated the one is without purpose, and the other is left groping in the dark.

While the principles can be formulated which govern the relations involved in the coordination of the factors of agricultural production, it should be borne in mind that in the last analysis no body of *rules* can be formulated which are of general application. Farms can not be operated by rule of thumb. What is right practice at one time is wrong at another time, and what is right practice at one place is wrong at another. The best training that could be given to farmers would comprise a *thorough knowledge of the physical and biological principles which underlie agriculture, the general laws of economics which relate to agriculture, and a thorough system of accounting, for the purpose of testing out results on the individual farm.* Any system which purports to furnish a complete scheme of farm administration applicable to all conditions is manifestly either utopian or fraudulent. Such rules must be worked out upon and for the individual farm, and changed with changing conditions. In the University of Wisconsin the title of professor of farm management is given to that member of the department of agricultural economics who teaches practice. His purpose is to show how the economic principles are being applied on scientific farms. This corresponds to Jouzier's division of the science and art, but with us it is no division of subject matter. This is illustrated by reference to our catalogue:

“COURSES IN AGRICULTURAL ECONOMICS OFFERED AT THE UNIVERSITY OF WISCONSIN, PRIMARILY FOR UNDERGRADUATES.

“Outlines of agricultural economics: A study of economic principles in their application to (1) the organization of agricultural production; (2) the marketing of farm products; (3) the purchase of land, equipment, and other supplies; and (4) State activities affecting the economic interests of the farmer.

“Three credits, first semester; two credits, second semester. Mr. Taylor.

“Farm accounting: A course designed to give the student such training in bookkeeping and accounting as will enable him to determine the financial results of his farm operation.

“Two credits, second semester. Mr. Valentine.

“Farm management: A study of farm practice as related to the application of economic principles to the business management of the individual farm. Visits will be made to farms of successful farmers and others for the purpose of studying methods of farm management.

"Two credits, second semester; lectures and field work. Mr. Otis."

The relation of these three undergraduate courses is obvious. The first course treats of the economic principles which the farmer should know in order to act intelligently in the production and marketing of farm products; the second, farm accounting, gives the student some training in records and accounts essential to the accurate application of these principles; while the third course, farm management, takes the student out upon the farm and gives him practice in one specific environment and is the *art* of applying the principles.

These three courses together cover the field which is called by some "farm management," by others "rural economy," and by others "agricultural economics." I maintain *there is but one field. Men of different training have seen this field, entered it, and given it different names.* It is also most likely true that no one of the men entering the field has comprehended it all. Nevertheless, when viewed scientifically, all principles which have to do with profit are economic principles. It follows that the principles which underlie the organization and management of a farm for profit are economic principles.

My contention is that the difference between "farm management" and "agricultural economics" as a college subject is a difference of words; that the one is the art or occupational name, while the other is the scientific name, drawn from the fundamental science which is being applied. It becomes obvious, therefore, that to try to define separate fields for these two terms is an impossibility.

Why would it not be a good plan to submit the subject matter involved to a committee of prominent economists and have them indicate by some uniform method the subjects which they would count to be in the field of economics? Then that which is economics and at the same time agriculture would, I believe, be counted agricultural economics. Whatever in the subject matter is not claimed by the economist would naturally be excluded from the field of agricultural economics.

Translation of a portion of a letter to Prof. Daniel Zolla from the professor of political economy in the College of France:

I am exactly of your opinion upon the point raised by you. There is no rural economy, or industrial economy, or commercial economy, etc. There is one science, more or less completely developed, which has for its name political economy. Its laws have one general character, their applications are different (diverse), and in a book or a course of lectures it is of importance to illustrate the laws by examples borrowed from the special material with which the author deals. In the first little treatise, which I published in 1868, I was able, in accordance with the program of instruction, to expound successively the materials relating to agriculture, industry, and commerce, but I was careful in advance to bind together these three branches of the economic activity by an explanation of the principles which govern all of them.

Jouzier says in his recent work on rural economy, almost as though it was a retort, that rural economy is only one of the subdivisions established in agriculture to facilitate its study. Here then we have one Frenchman recognizing rural economy only as a phase of political economy, and the other stating that it is a subdivision of agriculture established to facilitate the study of agriculture, all of which goes to show that American students are not the only ones who have not come to a common agreement.

CONCLUSIONS.

It is apparent from the communications which have been read that, first, there is a demand that the line of cleavage should be determined between the course of study which deals with the economic problems in agriculture and the courses of study known at present as agronomy, horticulture, animal husbandry, dairying, and rural engineering, and, second, there is a general consensus of opinion, although not entirely unanimous, that there are two classes of subject matter in the field of economics. One class of subjects deals with the farm as a unit; the other deals with the community as a unit. When differentiated, the course of study dealing with the first class of problems has been usually, but not always, called farm management; the course of study dealing with the second has perhaps always been called rural economy or economics or agricultural economics, unless further subdivision has taken place.

It is also evident from the discussion that, in some cases at least, different names have been given to the same matter.

The subject taught or investigated under the head of farm management, as related to the organization and management of individual estates devoted to agriculture, in the judgment of this committee, necessarily involves the application of the principles of economics. These principles constitute the scientific basis of farm management and give this subject its only just claim for consideration as having a pedagogical value entitling it to a place in courses of study or a scientific standing as related to problems of investigation.

It is true that the farm manager should take into account what is taught under agronomy, animal husbandry, agrotechny, and rural engineering, but he is chiefly and essentially concerned with the application of economic principles to the conduct of his business. Outside of economics there is nothing which can give his business a sound scientific basis. The mere collection of the details of methods of conducting different farms will not suffice. There must be the reference of these matters to some underlying principles. When this is done, it is clear that farm management comes within the domain of economics, because the purpose of farming is to secure a profit from the use of the land and its equipment. If profit is lost sight of, the farm manager, though trained in all branches of farm practice, is doomed to failure.

Some teachers and investigators with a thorough knowledge of farming and either by temperament or training with little interest in philosophical studies have approached the economics of agriculture from the standpoint of farm practice. Some even maintain that it is the only scientific way of approaching the subject.

Other workers in the field, thoroughly trained in economic theories, but perhaps less experienced in farm methods, have developed their subject largely from the philosophical point of view.

Warren, for example, has determined by statistical methods that the labor income in Tompkins and Livingston Counties, N. Y., was greater on a 200-acre farm than on a 100-acre farm. Taylor has with great clearness discussed the relation of the size of farms to income from a purely theoretical standpoint. Both these discussions are valuable, one, perhaps, no more so than the other. The man who intends to purchase a farm in Niagara County, one-third of which is to be planted with apples and interplanted with market-garden crops and two-thirds devoted to general farm crops will not have a thorough understanding of his problem until he has read both discussions.

It is obvious that the ideal to be desired is for the teacher and investigator to bring to these economic problems the training and point of view of both the economist and the agriculturist. The present discussion regarding the respective fields of rural economics and farm management will prove of great benefit to agricultural education and research if it serves to emphasize the fundamental importance of thorough practical and scientific training for teachers and investigators who deal with the complex problems of rural economics, whether these relate to the rural community or the individual farm.

While it is desirable that there should be a uniform nomenclature and that certain lines of cleavage should be indicated when the subject matter now being taught, or proposed to be taught, is clearly outlined, these questions are of secondary importance to the training and ability of the men who must pioneer this field of study.

Furthermore, a whole-hearted attempt should be made to develop this important branch of agricultural study in all our agricultural colleges. At least one man in each institution should devote his time to economic problems relating to agriculture.

In deciding upon the subdivisions of subject matter in any course of study the question naturally arises whether the body of available subject matter is sufficient to warrant the subdivision.

The time has arrived when the discussion of economic problems should be differentiated from what Butterfield has termed the farm-practice subjects, which are included in the first four branches of agriculture as previously outlined by this committee.

With regard to the fifth branch of study, it seems desirable to use the term *rural economics* as applicable to the general field of economics in its relation to agriculture and rural communities. The term *farm management* may properly be restricted to that phase of

rural economics which deals with the business organization and direction of individual farm enterprises, or, in other words, deals with the farm as a unit.

Rural economics is preferable to agricultural economics because the former term indicates that the affairs of the community, as well as of the individual farmer, are to be considered under this head. Rural economics or economy has for a long time been used in this sense in this country and abroad, and there does not seem to be sufficient reason for departing from this usage. There does not seem to be any single term under which are grouped the community phases of rural economics, as distinguished from those relating to the individual estates.

But besides the more general courses in rural economics there will undoubtedly be an increasing number of courses treating of various subdivisions of this subject, in addition to farm management. Such, for example, would be courses in farm accounting, cooperation and credit, farm labor, markets and marketing, taxation, etc.

There is another group of rural problems which is quite clearly differentiated from rural economics and forms a branch of social science or sociology, to which the name of rural sociology may be appropriately applied. Rural law and legislation, history of agriculture, and comparative agriculture are also subjects more or less distinct and separate. For the present, however, it may be desirable to put such subjects in some other department in order that some attention may be given them in the scheme of college courses in agriculture. As the resources of the agricultural colleges increase and trained specialists along these lines are available, separate chairs should be established to represent these important subjects.

Your committee is deeply impressed with the importance of developing strong courses in rural economics and sociology and the other subjects just referred to. These all involve the human element in agriculture and country life. They tend to raise the college courses in agriculture above the materialistic plane, to emphasize broadly the human interest that properly inheres in agricultural studies, and thus to inspire both faculties and students in our agricultural colleges with a higher sense of the wide responsibilities attaching to leadership in agricultural affairs. Pedagogically they serve to show that agriculture when broadly treated is to be enrolled among the humanities, as well as the sciences, and ethically they point out the vital connection between agricultural science and the welfare of rural people and even of all mankind.

GROUPING OF STUDIES IN AGRICULTURAL COLLEGE COURSES.

The eighth report of the committee on methods of teaching agriculture of this association contains a discussion of the relation of

the natural sciences to agriculture in a four-year college course.¹ In this report the general relation of the natural-science courses to those in agriculture and other subjects was given in the following outline:

Agricultural course in college.¹

Freshmen.		Sophomores.		Juniors.		Seniors.	
Subjects.	Hours.	Subjects.	Hours.	Subjects.	Hours.	Subjects.	Hours.
Physics.....	150	Agriculture:		Agriculture:		Agriculture:	
Chemistry.....	150	Zootechny...60)	150	Agromony. 50)	150	Dairying...70)	
Geometry and		Agromony...90)		Zootechny .100)		Farm me-	
trigonometry..	155	Meteorology.....	60	Geology.....	120	chanics...60)	190
English.....	120	Agricultural		Botany.....	60	Rural eco-	
Modern language.	180	chemistry.....	180	Physiology.....	180	nomics...60)	
		Botany.....	120	Zoology.....	120	Veterinary medi-	
		English.....	80	Psychology.....	60	cine.....	180
		Modern language.	100	Modern language.	60	Horticulture and	
		Drawing.....	60			forestry.....	180
						History and po-	
						litical economy.	190
						Ethics.....	40
	755		750		750		780

¹ A general outline of this course, without reference to its division according to years, was given in the second report to this committee. (See U. S. Dept. Agr., Office of Experiment Stations Bul. 49 and Cir. 37.) The number of hours assigned to each subject includes the time given to laboratory exercises, each of which would occupy two hours. Thus, for example, 150 hours of physics may be divided into 60 lectures or recitations, and 45 (=90 hours) laboratory exercises. The committee has not attempted to say how the time should be divided between lectures or recitations and laboratory exercises, but presupposes that a reasonable number of laboratory exercises or practicums will be given in all the science courses.

The arrangement of the college course here suggested proceeds on the assumption that it is best for the student to devote his time largely during the first two years to language, mathematics, and the fundamental sciences, physics, chemistry, and botany. He will thus be prepared for a better understanding of the more complex sciences of agriculture, zoology, animal physiology, and veterinary medicine in the second half of his course.

The course in agriculture has been arranged with reference to taking up first in sophomore year some of the simpler topics in zootechny, such as stock judging and types of breeds, which do not require scientific knowledge, but are well calculated to arouse the interest of the student in agricultural subjects. Agronomy may then be taken up systematically and run along with the study of meteorology, agricultural chemistry, and botany, and the more scientific study of zootechny may be parallel with the study of physiology and zoology. In senior year a considerable number of electives could be offered, one or more of which might be substituted for veterinary medicine, horticulture and forestry, or history and political economy, so as to enable the student to specialize in agronomy, horticulture, zootechny, dairying, farm mechanics, vegetable pathology, entomology, etc. In general, however, it is believed that the course as here outlined will be satisfactory as providing a liberal education, including systematic study of the theory and practice of agriculture, and as a good foundation for specialization in agriculture and the sciences related thereto in post-graduate courses.

¹ See U. S. Dept. Agr., Office of Experiment Stations Cir. 55.

An examination of the recent catalogues of the agricultural colleges shows that there is a relatively large amount of required studies in the first two years of the course, but that a considerable number of institutions offer some electives in the first and second years. There are also a large number of elective courses. These are principally found in the third and fourth years, but a considerable number of institutions offer some electives in the first and second years. There are a certain number of subjects which are quite generally included among the required or elective studies. These subjects and the number of colleges in which they are taught are shown in the following table:

Studies given in a considerable number of agricultural colleges.¹

Subjects.	First year.	Second year.	Third year.	Fourth year.
Required:				
English.....	38	22		
German.....	16	15		
Mathematics.....	30			
Physics.....		18		
Chemistry.....	24	36	16	
Botany.....	23	22		
Zoology.....		17		
Drawing.....	16			
Military.....	27	26		
Agronomy.....	21	31	21	
Animal husbandry.....	22	24	18	
Horticulture.....		26		
Elective:				
Economics.....				9
Chemistry.....			11	8
Botany.....			8	9
Agronomy.....			14	16

¹ The figures in this table indicate the number of colleges in which the subjects are taught.

It may therefore be said that there is more or less general agreement among the agricultural colleges that the subjects (about a dozen) named in the above table should be included in a college course in agriculture, and that most of them should be required studies in the first and second years. Outside of these subjects there is apparently great variety of opinion among these colleges as to the make-up of courses.

As a basis for discussion of the grouping of studies in agricultural college courses, the following groups are suggested: (1) Languages; (2) mathematics and sciences; (3) history, economics, and psychology; (4) agriculture; and (5) drawing, military, and gymnastics. Several courses grouped in this way are shown in the following table:

Grouping of studies in college course.

[The figures in the table indicate semester credits.]

Subjects.	Iowa (agron- omy).	Wiscon- sin (agri- culture).	Commit- tee (agri- culture).	Wesleyan (chemistry).	Cornell (civil engineering).	Massachu- setts Insti- tute of Technology (civil engineering). ¹
Group 1:						
English.....	8	6	10	8	0	10
Modern language.....	0	8	12	16	0	6
Total.....	8	14	22	24	0	16
Group 2:						
Mathematics.....	3	3	5	9	16	15
Physics.....	3	10	6	10	8	16
Geology.....	0	0	3	4	6	7
Chemistry.....	14	19	14	0	11	11
Astronomy.....	0	0	0	0	0	3
Botany.....	8	6	10	8	0	0
Bacteriology.....	4	7	10	10	0	0
Physiology.....	0	0	0	0	0	0
Zoology.....	9	0	0	0	0	0
Entomology.....	0	0	0	0	0	0
Biology.....	0	5	0	5	0	0
Minor study.....	0	10	0	0	0	0
Total.....	41	60	48	² 46	41	52
Group 3:						
History.....	2	0	8	6	0	2
Economics.....	3	0	0	6	6	3
Business law.....	0	0	0	0	0	1
Psychology.....	0	0	3	4	0	0
Ethics.....	0	0	1	2	0	0
Total.....	5	0	12	18	6	6
Total in groups 1, 2, and 3.....	54	74	82	88	47	74
Group 4:						
Agronomy.....		2½	8			
Soils.....	13	5	0			
Farm crops.....	23½	0	0			
Animal husbandry.....	14½	5	8			
Horticulture.....	11	2½	3			
Forestry.....	0	0	3			
Dairying.....	2½	2½	3			
Agricultural engineering.....	8½	2½	5			
Agricultural economics.....	0	5	5			
Veterinary.....	1	0	2			
Major study.....	0	10	8			
Electives in agriculture.....	0	12	8			
Total.....	74½	47	50	44	90	91
Total required.....	128½	121	132	132	137	165
Electives.....	10½	12	00	0	3	8
Total.....	138½	133	132	132	140	173
Group 5:						
Military.....	8	8	8		3	4
Gymnastics.....	0	8			3	2
Drawing.....	0	0	2		6	2
Library.....	2	0	0		0	0
Total.....	10	16	10	0	12	8
Grand total.....	148½	149	142	³ 132	152	181

¹ This course includes a relatively large amount of laboratory work. All students who are candidates for a degree are required to complete prescribed courses of reading of a nonprofessional character during the summers following the first and second school years. The purposes of these courses are to increase the acquaintance of the student with literature, history, and general science, to develop in him a taste for such reading, and to impress him with the importance of general culture.

² 18 required.

³ 120 required for graduation.

In a general way the agricultural colleges may be divided into two classes, according to the amount of strictly agricultural studies which are required of students graduating in agricultural courses. These two classes of institutions and the way in which their courses work out when arranged in accordance with the aforesaid groups may be illustrated by the agricultural courses at the University of Wisconsin and the Iowa State College.

Arranged on a similar plan, the course in agriculture outlined by this committee, as stated above, has been included in the table, with modifications permitting specialization through a major study and some electives in agriculture.

Further theoretical studies in pedagogy, as well as the practical experience of many institutions, indicate that some of the more elementary subjects in agriculture should be taught in the freshman year. The committee would now be inclined to revise its course in agriculture in this direction. The increased requirements for entrance to college also make this more feasible. Such a change in the college course tends to secure more students for the agricultural courses, shows them early in their course the importance and interest in agricultural studies, and starts them out in a path which they will be more likely to follow to the end of the college course.

For comparison, a course is outlined in the table which might be taken in a college of a different type by a student specializing in chemistry. One of the smaller standard colleges has been taken in which natural sciences, especially chemistry, have a prominent place and whose curricula are made up by a combination of groups and electives. This is Wesleyan University, in Connecticut. For graduation, 120 semester credits is the minimum requirement. One-half of these must be taken from groups of studies corresponding essentially to groups 1, 2, and 3 in the college course in agriculture. At least 24 credits must be in group 1, languages; 18 in group 2, mathematics and sciences; and 18 in group 3, history, etc. For the rest of his course the student practically has a free choice of studies offered by the college. He will therefore be able to make up a course corresponding, as far as these three groups are concerned, to that portion of the course suggested for the agricultural college, and then add to this credits in chemistry and closely allied studies about equivalent to the credits laid down for agriculture.

An outline of the course in civil engineering at Cornell University is given to illustrate how large a part of the college course is devoted to engineering subjects in many colleges of engineering. In such institutions there is now a tendency to broaden the courses by requiring more of the so-called cultural subjects. This is here illustrated by the course in civil engineering offered by the Massachusetts Institute of Technology.

HOME ECONOMICS.

At the last convention of this association this committee made a report on college courses in home economics.¹ Subsequently the chairman, acting as a member of the committee on nomenclature of the Association of Home Economics, attended the meeting of the National Education Association at San Francisco, where a report of the nomenclature committee was submitted to a joint meeting of the Home Economics Association and the manual training department of the National Education Association. In this report was embodied the definition of home economics recommended by your committee, and it was urged that the term home economics be employed as the designation of the general subject, whether taught in colleges or secondary or elementary schools. After full discussion this report was accepted. Your committee believes that it would be of great advantage to have the term home economics used in this way, and earnestly recommends that the institutions in this association use this term to designate the departments in which this subject is taught.

A. C. TRUE,
T. F. HUNT,
J. F. DUGGAR,
W. E. STONE,
H. C. WHITE,
H. J. WATERS,
Committee.

Recommended for publication.

A. C. TRUE, *Director.*

Publication authorized.

JAMES WILSON, *Secretary of Agriculture.*

WASHINGTON, D. C., *December 4, 1911.*

¹ Proc. Assoc. Amer. Agr. Cols. and Expt. Stas., 24 (1910), p. 53; Jour. Home Econ., 3 (1911), No. 1, p. 25.

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